A. Rejections under 35 U.S.C. 102

Claims 1, 3-4, 6, 13-15, and 17-19 were rejected under 35 U.S.C. 102 as anticipated by Massiglia, The RAID Book. This rejection is respectfully traversed.

Independent claims 1, 6, and 13 are amended to call for, among other things, a plurality of back-end controllers coupled to the disk. Independent claims 13 and 18 are amended to call for acts of using a plurality of back-end controllers to organize disks into particular claimed configurations. The Office Action notes that Massiglia fails to show this feature (page 4, section 8 of the Office Action). Accordingly, it is believed that Massiglia cannot anticipate these claims, as amended.

Moreover, Massiglia alone or in combination with the other cited references fails to suggest such a change. As noted more fully below, it is believed that the Filgate reference that is relied on to show multiple back-end controllers is not believed to be available as a reference against the instant application. Accordingly, the invention is neither anticipated nor made obvious by Massiglia.

B. Rejections under 35 U.S.C. 103

Claims 2, 5, 7, 16 and 20 were rejected under 35 U.S.C. 103 as unpatentable over Massiglia, claim 8 as unpatentable over Massiglia in view of Filgate, and claims 9-12 as unpatentable over Massiglia in view of Filgate and further in view of Matoba. These rejection are respectfully traversed.

Independent claims 1, 6, 14 and 18, as noted above, have been amended to include a limitation of a plurality of back-end controllers as originally appeared in claim 8. Accordingly, it is believed that the rejection applied against claim 8 (e.g., Massiglia in view of Filgate) is the only rejection that need be addressed here as the other rejections are made moot by the amendments.

It is respectfully believed that Filgate is not available as a reference under 35 USC 103, as amended, because the subject matter of the instant invention was owned by the same person (i.e., Compaq Computer Corporation) as the Filgate reference at the time the invention was made. Hence, the reference is potentially available only under 102(e) or (f), which are explicitly excluded from consideration under 35 U.S.C.

103(c). Applicant's attorney is aware that the legislation affecting the change to 35 U.S.C. 103(c) had a stated effective date, however, the actual statute does not reflect such date. It is believed that is was not Congress' intent to cause inventors to file needless CPA filings in order to benefit from the new legislation. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. 103, all of which require the Filgate reference, be withdrawn.

C. Conclusion

In view of all of the above claims 1-20 are believed to be allowable and the case in condition for allowance which action is respectfully requested. The references that were cited and not relied upon are believed to be no more pertinent that those references that were relied upon.

No fee is believed to be required by this response as determined on the accompanying transmittal letter. Should any other fee be required, please charge Deposit 50-1123. Should any extension of time be required please consider this a petition therefore and charge the required fee to Deposit Account 50-1123. Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned **"Version With Markings To Show Changes Made"**

Respectfully submitted,

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BY: _____

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

A. In the Specification:

Page 11, line 2 is amended as follows:

A very large virtual storage volume [(e.g., in excess of 500GB) is] formed by distributing [the] disks in [eleven, six-disk RAID-5] multiple, multi-disk RAID (redundant array of independent disks) sets across [the six] busses of a [primary local] back-end controller. [A spare disk is provided on each of the six busses. Each RAID-5 set is protected from the failure of a single disk by the spare disks on the busses, which can use the parity data stored in a RAID-5 set to rebuild the data stored on a failing disk and thereby restore redundancy to the RAID-5 set. Each RAID-5 set is also protected from the failure of a bus by the parity inherent in RAID-5.] The [RAID-5] multiple RAID sets are striped by a front-end controller connected to the [primary local] back-end controller[,] and [the striped RAID-5 sets are] presented to a host computer as a very large virtual storage volume. [If the individual disks are 9.1 GB in size, the size of the very large virtual volume can reach 500.5GB. If desired, additional groups of eleven, six-disk RAID-5 sets can be formed on additional back-end controllers for purposes of redundancy, cloning (which generates a copy of the data that can be used for off-line backup without interrupting read/write activities on the virtual volume), and disaster tolerance through remote storage. These additional groups of RAID-5 sets, along with the RAID-5 sets from the primary local back-end controller, can be formed into mirror sets by the front-end controller, which then stripes the mirror sets and presents the striped mirror sets to the host computer as the very large virtual volume.]

B. In the claims

1(Amended). An apparatus for providing a virtual volume, the apparatus comprising:

a plurality of disks;

a plurality of back-end controllers coupled to the disks for organizing and presenting the disks as a plurality of redundant arrays of disks; and

a front-end controller coupled to the plurality of back-end controllers for striping the redundant arrays of disks and presenting the striped arrays as a virtual volume.

6(Amended). An apparatus for providing a virtual volume, the apparatus comprising:

a plurality of disks;

a redundant array of independent disks (RAID) engine comprising a plurality of back end controllers coupled to the disks for organizing and presenting the disks as a plurality of RAID sets; and

a striping engine coupled to the RAID engine for receiving the RAID sets as members, striping the member RAID sets, and presenting the striped RAID sets as a virtual volume.

13(Amended). An electronic system comprising: a computer; and an apparatus coupled to the computer for presenting a virtual volume to the computer, the apparatus including:

a plurality of disks;

a plurality of back-end controllers coupled to the disks for organizing and presenting the disks as a plurality of redundant arrays of disks; and

a front-end controller coupled to the back-end controllers for striping the redundant arrays of disks and presenting the striped arrays as the virtual volume.

14(Amended). A method of storing data on a plurality of disks, the method comprising:

using a plurality of back-end controllers, organizing the disks into a plurality of redundant arrays of disks;

using at least one front-end controller, striping the redundant arrays of disks together to form a virtual volume; and

writing the data to the virtual volume.

18(Amended). A method of storing data on a plurality of disks, the method comprising:

using a plurality of back-end controllers, organizing the disks into a plurality of redundant arrays of disks;

using at least one front-end controller, forming mirror sets from the redundant arrays of disks;

using the at least one front-end controller, striping the mirror sets together to form a virtual volume; and

writing the data to the virtual volume.